



PORT of
vancouver

HABITAT ENHANCEMENT PROGRAM: TSAWWASSEN EELGRASS PROJECT

PROJECT DESCRIPTION

Submitted to:

**Vancouver Fraser Port Authority
Planning and Development**

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Habitat Enhancement Program**

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List of Acronyms

BC	British Columbia
BCTC	British Columbia Transmission Corporation
BCTFA	BC Transportation Financing Authority
CD	Chart Datum
CDF	Costal Douglas Fir
CDFmm	Coastal Douglas Fir Moist Maritime
DFO	Fisheries and Oceans Canada
EPP	Environmental Protection Plan
FRPD	Fraser River Pile & Dredge (GP) Inc.
HEP	Habitat Enhancement Program
M&N	Moffatt & Nichol
MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
MMO	Marine Mammal Observer
PCMP	Post-Construction Monitoring Plan
PER	Project and Environmental Review
SARA	<i>Species at Risk Act</i>
SCUBA	Self-Contained Underwater Breathing Apparatus
SRKW	Southern Resident Killer Whale
TFN	Tsawwassen First Nation
VEC	Valued Ecosystem Component
VFPA	Vancouver Fraser Port Authority
VITR	Vancouver Island Transmission Reinforcement
VSC	Valued Social Component
WMA	Wildlife Management Area

List of Abbreviations

BC Ferries	British Columbia Ferry Services Inc.
Hemmera	Hemmera Envirochem Inc.
Kirk & Co.	Kirk & Co. Consulting Ltd.
The Project	Tsawwassen Eelgrass Project
The Sites	Site 1 and Site 2

1.0 Introduction

The Habitat Enhancement Program (HEP) is a Vancouver Fraser Port Authority (VFPA; formerly Port Metro Vancouver) initiative focused on creating, restoring and enhancing fish and wildlife habitat. The program consists of projects around the Lower Mainland, through which VFPA ensures the viability and sustainability of new and enhanced habitat. The program is a proactive measure intended to provide a balance between a healthy environment and future development projects that may be required for port operations.

The proposed Tsawwassen Eelgrass Project (the Project) consists of two sites, Site 1 to the west and Site 2 to the east (the Sites), located on Roberts Bank south of the Tsawwassen Ferry Terminal near Delta, British Columbia (BC) (**Attachment 1**). The Project is being advanced as a potential project under VFPA's HEP. Project planning is being undertaken in accordance with the 2012 working agreement between VFPA and Fisheries and Oceans Canada (DFO) entitled "Working Agreement Concerning Procedures for Development and Operation of the Port Metro Vancouver Habitat Bank". This agreement acknowledges the mutual benefits of a habitat bank to both parties, while also providing guidelines for the establishment of habitat enhancement sites. Habitat enhancement sites under this program are developed in agreement between both parties. DFO has confirmed that the Project would conform to the Fisheries Productivity Investment Policy as a habitat development and/or restoration project that may be deposited into VFPA's Habitat Bank.

This proposed Project would convert two subtidal depressions that are too deep to be naturally colonized by eelgrass, into more productive fish and wildlife habitat via the creation of high productivity eelgrass beds. The existing subtidal depressions were likely created as a result of historic dredging activities during development of the Tsawwassen Ferry Causeway. The Sites are bordered to the north by a recreational boating channel and are surrounded by eelgrass meadows to the south and east.

Creation of eelgrass beds would be accomplished by constructing rock containment berms followed by the placement of suitable substrate material and transplanting of eelgrass. Fill for the Project is proposed to be sourced using material from annual maintenance dredging undertaken in the South Arm of the Fraser River. Eelgrass would be installed by divers utilizing self-contained underwater breathing apparatus (SCUBA) equipment, following a period of substrate settlement. The total area of habitat enhancement is approximately 4.26 hectares (42,600 m²: 25,800 m² at Site 1 and 16,800 m² at Site 2). Detailed (95%) design drawings have been included in **Attachment 1**.

This Project was originally submitted under VFPA's Project and Environmental Review (PER) Process in April 2015. However, as the PER Process was updated in summer 2015, the April application was considered to be a preliminary submission. A preliminary Project review was completed under the PER Process in September 2015 and the PER team provided initial feedback regarding the application to the Project team. Following the preliminary review

process, VFPA's PER team confirmed that the Project would be classified as a Category C review project.

This updated Project Description has been prepared as an attachment to a completed "Project Permit Application Form for Category C & D Reviews" which is being submitted to VFPA's Planning and Development Department to facilitate a full project review process. A table of Key Milestones relating to the Project has been included in **Attachment 2**. Supporting information for the application, has been included as attachments to this report. Further details, and Project updates to supplement this application will be provided as the design, consultation and engagement processes advance in 2017.

2.0 Proponent Information

VFPA's Project team, including Hemmera Envirochem Inc. (Hemmera), Moffatt & Nichol (M&N) and Kirk & Co. Consulting Ltd. (Kirk & Co.), comprises environmental, engineering, engagement, and consultation specialists who are working to manage and undertake activities associated with the design, permitting, construction, and monitoring of the Project. Key contacts for the Project have been provided in the PER permit application form submitted with this Project Description.

3.0 Rationale

The location chosen for this Project is one of a number of different locations that the VFPA Project team has identified within the broader Geographic Service Area (i.e., "Fraser Estuary, Boundary Bay, Burrard Inlet, Fraser and North Arms") where existing habitat can be enhanced to increase its productive capacity or where degraded areas can be restored to benefit fish and wildlife species. The Fraser River estuary is an important migratory, rearing and spawning area for fish, including ecologically and economically important salmonids. This estuary is also globally recognized as a key migratory stop-over and wintering area for millions of waterfowl and shorebirds and is recognized as providing habitat for many resident bird species.

Construction of eelgrass beds is proposed in this area as eelgrass provides habitat for many commercially and ecologically important invertebrate and vertebrate species (Levings et al. 1983, Hemminga and Duarte 2000, Wyllie-Echeverria and Ackerman 2003). Eelgrass also provides many important abiotic ecosystem services, including filtering water, trapping and binding sediments, baffling wave and current energy, removing contaminants, producing oxygen, sequestering carbon, accelerating nutrient regeneration, and regulating nutrient cycles (Moore and Short 2006).

Eelgrass grows within shallow estuarine and marine waters with muddy or sandy substrates. Within the outer Fraser River estuary, including Roberts Bank, eelgrass beds occur in calmer waters where soft and stable substrates are present and enough light is available. The

Roberts Bank area is noted for its extensive beds of eelgrass and is recognized as valuable fisheries habitat (Triton Environmental 1996). Both the perennial native eelgrass (*Zostera marina*) and the annual non-native eelgrass (*Z. japonica*) occur within the Fraser River estuary, with common eelgrass typically occurring at lower elevations in the tidal range and in shallow subtidal areas. The Project considers and builds on adjacent existing eelgrass habitats and will result in an increase in spatial extent of this valuable, productive habitat. Without this habitat enhancement initiative, these areas would likely not develop into eelgrass habitat due to the excessive depths of the existing dredge depressions.

The Sites are located in close proximity to two eelgrass beds, totaling 2.09 ha, that were successfully created in 2008 by the British Columbia Transmission Corporation (BCTC) as a compensatory measure for the Vancouver Island Transmission Reinforcement (VITR) project (see **Attachment 3**). Using knowledge gained from that eelgrass creation project and others, the design team for this Project, which includes appropriately qualified engineers, coastal geomorphologists, professional biologists and an eelgrass specialist, anticipate that these works will provide long-term benefits to ecosystem productivity at this location.

In addition, fill for the Project is proposed to be sourced using dredged material from the South Arm of the Fraser River. Annual maintenance dredging is undertaken by VFPA's Marine Operations Department to maintain access to key shipping channels. More than two million cubic metres of silt and sand are removed from the South Arm on an annual basis with a large portion of the dredged materials typically being disposed of at sea. By beneficially using some of the material from annual maintenance dredging operations, the Project will eliminate the need to source fill material from elsewhere and beneficially use material that would otherwise be disposed of at sea.

3.1 Habitat Banking

The Sites have been identified for inclusion in the VFPA Habitat Bank. Creation of this habitat in advance of anticipated impacts from future projects can provide a significant benefit to fish and wildlife, primarily by reducing or eliminating temporal impacts that are typically associated with habitat offsetting projects. Successful achievement of biological objectives at a habitat enhancement site can also be verified prior to the final review of development projects for which habitat credits may be used. Thus, rather than presenting regulators with values that are estimates based on conceptual offsetting plans, this approach will invoke confidence in the value and the viability of the habitat proposed for the offsetting of future development projects.

4.0 Project Location

The Project is located in close proximity to the Canada-United States border, southeast of the Tsawwassen Ferry Terminal within the southern limits of Roberts Bank, adjacent to a 60 m wide recreational boating channel (**Figure 1** and **Figure 2**). The Project falls primarily within the boundaries of a waterlot owned by BCTFA (PID 025-701-118, Block F, Plan BCP5645, Block F of District Lot 797; see **Attachment 3**). A long term lease to BC Ferries is registered on title for the operation of the Tsawwassen Ferry Terminal within this waterlot. A portion of the Project also falls within District Lot 955, which is a provincial waterlot leased to Tsawwassen First Nation (TFN), which fronts the Municipality of Delta. TFN also holds lands to the northeast of the Tsawwassen Ferry Causeway.

The Roberts Bank Wildlife Management Area (WMA) borders the south side of District Lot 955. The Roberts Bank WMA consists of four parcels of land administered by the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO); the two nearest to the Sites are southeast of the parcel leased to TFN and northwest of the Tsawwassen Ferry Terminal in the inter-causeway area.

The main channel reaches of the South Arm of the Fraser River, the proposed source location for fill material, is also provided for reference in **Figure 3** below.



Figure 1 Tsawwassen Eelgrass Project - Regional setting



Figure 2 Approximate Locations of the Proposed Eelgrass Beds

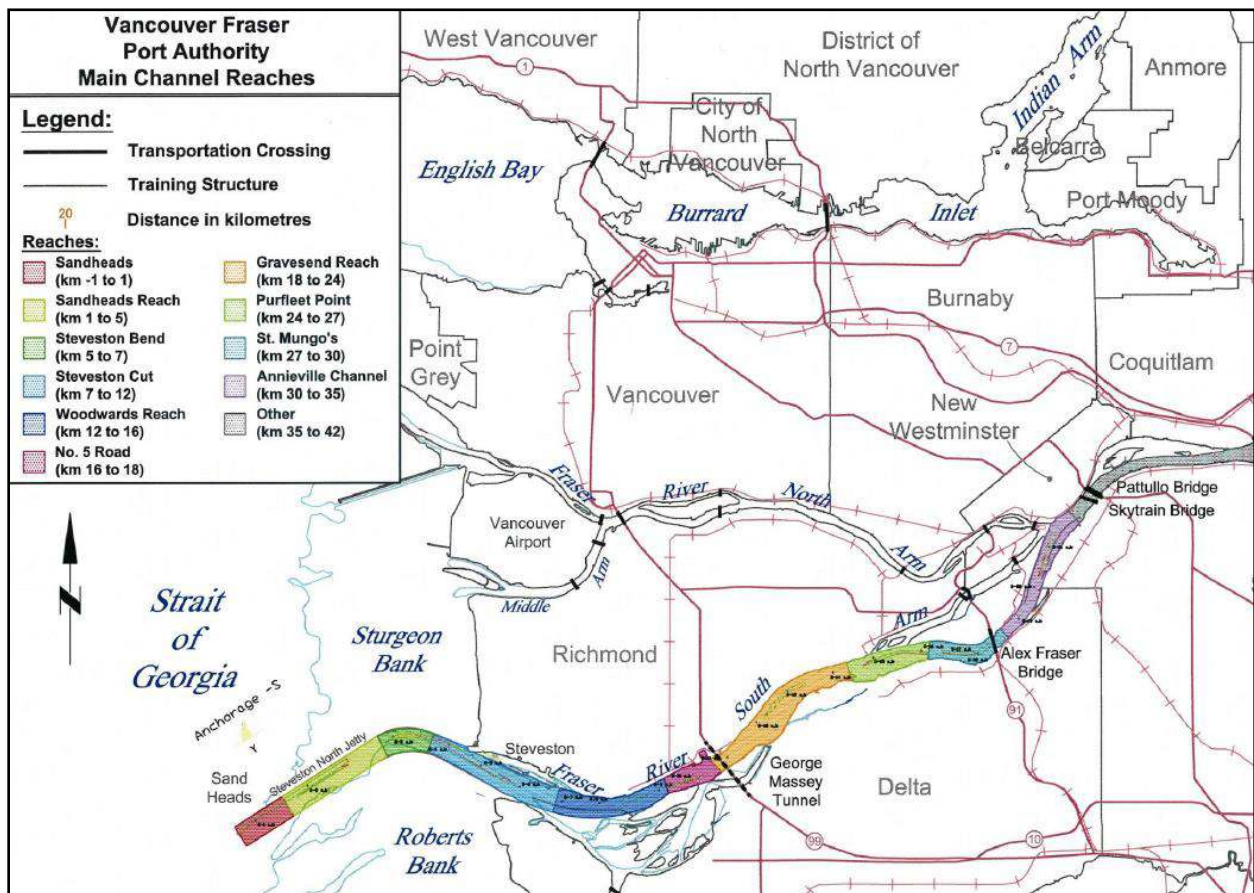


Figure 3 Dredging Reaches in the South Arm of the Fraser River

5.0 Site History

A review of relevant reports, databases and historical data, including aerial photographs, was carried out to gain knowledge on the history of the Sites and surrounding areas. The area southeast of the Tsawwassen Ferry Causeway, in which the Sites are located, was originally part of the larger Roberts Bank sandy tidal flat. Historical aerial photography, available from 1950 onwards, allows for the approximation of large-scale changes over time within the local setting; however there are numerous factors (e.g., image resolution, varying tide heights, etc.) which limit the precision of this type of information. Aerial photography from 1950 and 1959 provides a baseline of the eelgrass presence at the Project location; the eelgrass bed is noted to be patchy, possibly due to high flow velocities and high turbidity. During this time period, eelgrass habitat in Roberts Bank was estimated to cover approximately 386.2 ha.

Flow and drainage patterns in the area were altered in the 1960s with construction of the Tsawwassen Ferry Causeway and Roberts Bank Causeway (Triton Environmental 1996). A dredge channel located south of the Tsawwassen Ferry Causeway, adjacent to the Sites, was also created during the construction of the Tsawwassen Ferry Causeway in 1960 (Precision Identification 2006). The channel is currently used by recreational boaters and remains open due to scouring from tidal currents (BCTC 2007). Two dendritic channels, flowing east from the inshore section of the Tsawwassen Ferry Causeway, were also formed due to localized changes in the drainage regime (Triton Environmental 1996).

The physical changes to the flow and drainage patterns in the 1960s, such as the deflection of the Fraser River plume (resulting in improved water clarity) and the increase in sedimentation due to reduced flow regimes (resulting in elevation of the substrate), produced favourable conditions for colonization by eelgrass. Between 1960 and the early 2000s, the eelgrass beds southeast of the Tsawwassen Ferry Causeway expanded seaward and landward and have increased in density, changing from a patchy to continuous distribution (Triton Environmental 1996, Precision Identification 2006).

The introduction of non-native Japanese eelgrass in the 1970s may have also provided additional momentum to the overall eelgrass expansion (Triton Environmental 1996, Precision Identification 2006). First recorded in Roberts Bank in 1974, Japanese eelgrass is able to colonize higher elevations in the intertidal zone than the native common eelgrass. The density of common eelgrass tends to decrease with increasing elevation as the habitat becomes less suitable, thus there is often a “transition area” between common eelgrass at lower elevations and Japanese eelgrass at higher elevations (Precision Identification 2006).

Information collected by Precision Identification (2006), including data on intertidal and subtidal areas, indicated that eelgrass distribution in 2005 had increased within the Roberts Bank area since a 2002 analysis was undertaken by the Fraser River Estuary Management Program. A visual comparison with intertidal data from 1992 and 1993 collected by the

Canadian Wildlife Service suggests that the 2005 area of dense (>75%) eelgrass coverage (located south of the Tsawwassen Ferry Causeway) had doubled since 1993, and increased between 2002 and 2005.

Eelgrass habitat was also created in close proximity to the Project location. In 2008, BCTC constructed two eelgrass beds totaling 20,900 m² (2.09 ha); a 1.09 ha shoreward bed and a 1.0 ha seaward bed, as compensation sites for the VITR project (**Attachment 3**). Both eelgrass beds are located along the dredge channel in close proximity (within 1.5 km) of the Sites (BCTC 2007). Evaluation of the two sites by BCTC prior to construction of the eelgrass beds suggested that colonization by eelgrass at the sites was limited by depth, slope and water velocities (BCTC 2007). Fill for the BCTC works was sourced from dredged Fraser River sand from VFPA's maintenance dredging program, and eelgrass stock for transplanting was sourced from the existing eelgrass meadow adjacent to the sites. Physical construction was completed in 2007, with eelgrass transplantation completed in 2008. Post-construction monitoring in 2010 indicated that the bed had proliferated to three times the original planting of eelgrass shoots (Golder Associates Ltd. 2011). Since completion of the BCTC project in 2008, no known eelgrass enhancement projects have been undertaken in the area.

6.0 Current Site Conditions

Information on current site conditions is based on a dive assessment of Sites 1 and 2 conducted on April 12, 2013 by Precision Identification, the literature review described in **Section 5.0** above, and a search of relevant provincial databases.

The Sites consist of two existing subtidal depressions with base elevations ranging from approximately -5.0 m to -6.0 m chart datum (CD). A 60 m wide channel, which is used extensively by recreational boaters to access a boat ramp located mid-way along the causeway, borders the Sites to the north. Extensive, dense eelgrass meadows, which have been stable and potentially expanding since 1960, are located to the east and south of the Sites. One of the eelgrass beds, created as compensation habitat by BCTC in 2008 for the VITR project, is located immediately east of Site 1.

The Sites were selected as suitable areas for eelgrass habitat creation given their relatively low existing fisheries habitat values as established during the 2013 dive assessment (summarized below in **Sections 6.1** and **6.2**). Previous dive surveys, conducted in support of VITR eelgrass compensation work in 2007, indicated that similar depressions in the local area were characterized by fine sand and clay substrates with occasional cobble and shell coverage. In addition, the areas around those depressions contained large amounts of eelgrass detritus and a few submerged logs (PMV 2013); logs however, were not evident during the more recent 2013 survey. A complete list of species observed during SCUBA surveys at Sites 1 and 2 in April 2013 can be found in **Attachment 4**.

6.1 Site 1

Site 1 is located immediately west of one of the VITR compensation eelgrass beds. The results of the dive survey conducted in April 2013 indicate that the biophysical attributes at Site 1 are relatively homogenous. Sediments consisted of sandy silt and were covered in most areas by a thin layer of microalgae (diatoms). Sunken logs were not observed during the dive survey, but accumulations of drift macroalgae and eelgrass detritus were noted. There was also an abundance of mounded burrow openings typical of the bay ghost shrimp (*Neotrypea californiensis*). A full list of the species observed, including a summary of their relative abundance, is provided in **Attachment 4**.

6.2 Site 2

Similar to SCUBA diver observations of Site 1, biophysical attributes at Site 2 are fairly homogenous. Sediments observed in April 2013 consisted of sandy silt with accumulations of drift macroalgae and eelgrass detritus. The only plant species present were microalgae. A relatively dense bed of sea pens (*Ptilosarcus gurneyi*) was encountered near the southwest corner of the site. An abundance of burrowing brittle stars (cf. *Amphiodia sp.*), mounded burrow openings typical of the bay ghost shrimp and a few small sculpins (*Cottidae sp.*) were also observed. A full list of species observed, including an overview of their relative abundance as noted during the dive survey, is provided in **Attachment 4**.

6.3 Land Use and Navigation Setting

The Sites are adjacent to the Tsawwassen Ferry Causeway, and border the southern edge of a channel used by recreational boaters to access a boat ramp located mid-way along the causeway. The channel was originally a dredge borrow area during construction of the Tsawwassen Ferry Causeway, but it is currently maintained due to natural scour processes and human uses.

Land uses in the Roberts Bank area are known to include recreational boating, fishing, hunting (e.g., waterfowl) and shellfish harvesting (particularly Dungeness crab (*Metacarcinus magister*), although crab harvesting is not permitted adjacent to the Tsawwassen Ferry Terminal).

This area is under VFPA's navigational jurisdiction and therefore the Project is subject to navigational review by VFPA (which is undertaken as part of the PER Process). The environment at the head (shoreward end) of the channel is known to be dynamic, with developing dendritic channels; however the remainder of the channel appears to be relatively stable. The water above the Sites is readily accessible to members of the public via the public boat launch, however the eelgrass beds would only be accessible to members of the public with access to SCUBA equipment.

7.0 Habitat Values

The following section summarizes the fish and wildlife habitat values within and surrounding the Sites. More detailed information regarding habitat values at the Sites is available in the Ecological Conditions Report for the Project, available online at:

www.portvancouver.com/wp-content/uploads/2015/08/Tsawwassen-Eelgrass-Project-Ecological-Conditions-Report.pdf.

7.1 Fish Habitat

The Fraser River estuary is one of the most ecologically and commercially important habitats on the Pacific coast. The Fraser River drains into the Strait of Georgia, located between Vancouver Island and the BC mainland, which is a highly productive marine ecosystem supporting populations of over 3,000 plant and animal species, including 200 finfish and 1,500 invertebrates (BCTC 2006).

An inventory of fish species present at Roberts Bank, in the Fraser River estuary, indicates that the area is used by a wide range of species including salmon and trout (*Oncorhynchus* spp.), flatfish, rockfish, lingcod (*Ophiodon elongatus*), spiny dogfish (*Squalus acanthias*), gobies, sculpins, perch and forage fish such as Pacific herring and Pacific sandlance (*Ammodytes hexapterus*) (Hemmera 2015). The most common fish species in sand/mudflat habitats are flatfish (e.g., English sole (*Parophrys vetulus*), Pacific sanddab (*Citharichthys sordidus*), rock sole (*Lepidopsetta bilineata*), starry flounder (*Platichthys stellatus*) and Pacific sandlance (Hemmera 2015).

Alteration of the existing habitat, to provide for the establishment of eelgrass beds, would significantly enhance the fisheries value of the Sites by improving habitat complexity and overall productivity, allowing for rapid colonization by fish and invertebrate species from adjacent eelgrass beds. Eelgrass beds are known to provide critical habitat for commercially, culturally and ecologically important species including out-migrating juvenile salmon, Pacific herring (*Clupea harengus*) and Dungeness crab (BCTC 2006). Many fish and invertebrate species utilize the Roberts Bank eelgrass beds for foraging or refuge from predation for some portion of their life cycle, most as temporary residents as they migrate to or from the Fraser River (BCTC 2006, Schweigert et al. 2007).

7.2 Vegetation

The Sites are entirely subtidal. The substrates at the Sites are largely unvegetated although a mat of diatoms of unknown composition over the sediments was present over both sites during the April 2013 dive survey.

7.3 Wildlife Habitat

The Sites are located in a subtidal portion of the Fraser River estuary situated in the Coastal Douglas Fir moist maritime (CDFmm) biogeoclimatic zone. Representative wildlife species known to occur in CDFmm estuaries, shallow bays, intertidal and subtidal marine habitat, that may also potentially occur within the vicinity of the Project, are listed in **Table 1** (adapted from Table 11; Nuszdorfer et al. 1991).

Table 1 Representative Wildlife Species of the CDF Zone

Taxa	Representative Wildlife Species Most Likely to Occur
Mammals	River otter (<i>Lontra canadensis</i>), Stellar sea lion (<i>Eumetopias jubatus</i>), harbour seal (<i>Phoca vitulina</i>), harbour porpoise (<i>Phocoena phocoena</i>)
Birds	Red-throated loon (<i>Gavia stellate</i>), yellow-billed loon (<i>Gavia adamsii</i>), trumpeter swan (<i>Cygnus buccinator</i>), Canada goose (<i>Branta canadensis</i>), brant (<i>Branta bernicla</i>), Barrow's goldeneye (<i>Bucephala islandica</i>), black scoter (<i>Melanitta americana</i>), surf scoter (<i>Melanitta perspicillata</i>), white-winged scoter (<i>Melanitta deglandi</i>), mallard (<i>Anas platyrhynchos</i>), northern shoveller (<i>Anas clypeata</i>), American wigeon (<i>Anas americana</i>), lesser scaup (<i>Aythya affinis</i>), green-winged teal (<i>Anas carolinensis</i>), pigeon guillemot (<i>Cephus Columba</i>), glaucous-winged gull (<i>Larus glaucescens</i>), California gull (<i>Larus californicus</i>), northwestern crow (<i>Corvus caurinus</i>), bald eagle (<i>Haliaeetus leucocephalus</i>), great blue heron (<i>Ardea herodias</i>)

Due to the subtidal nature of the Sites, marine mammals have the potential to use the Project area. Harbour seals (*Phoca vitulina*), which are resident year-round, are the most abundant marine mammals in the Strait of Georgia and have been observed along the Tsawwassen break-water. California and Stellar sea lions (*Zalophus californianus* and *Eumetopias jubatus*) are less abundant and arrive in the fall and depart in the spring (Keple 2002, BCTC 2006). Harbour porpoises (*Phocoena phocoena*) are present year-round in the Strait of Georgia, usually in shallower, inshore waters, and have been observed in the Fraser River and in shallower water (<100m) near the Tsawwassen Ferry Terminal (BCTC 2006). Other marine mammals known to occur in the Strait of Georgia include killer whales (*Orcinus orca*), Dall's porpoises (*Phocoenoides dalli*), Pacific white-sided dolphins (*Lagenorhynchus obliquidens*) and baleen whales (BCTC 2006).

Invertebrates observed during the SCUBA survey at the Sites include several species of molluscs (including clams, cockles and nudibranchs), annelid worms, echinoderms (sea stars), anemones and arthropods. Orange sea pens were observed at Site 1 and Site 2, as well as opalescent nudibranch (*Hermisenda crassicornis*) and Mysiid shrimp (*Mysidacea sp.*). Mounded burrow openings typical of the bay ghost shrimp were abundant at Site 1 and Site 2 although individuals were not observed (**Attachment 4**).

The following commercially important species are known to occur, or are likely to occur, in and around the Sites: Dungeness crab, slender crab (*Metacarcinus gracilis*), Manila clams (*Venerupis philippinarum*), littleneck clams (*Protothaca staminea*) butter clams (*Saxidomus gigantea*) and cockles (BCTC 2006, PMV 2013). Scallops (*Pectinidae sp.*) and geoducks (*Panopea generosa*) are habitually harvested and have the potential to occur at or near the Project Sites, but neither were observed during the 2013 survey. It should be noted that the Sites fall within DFO Fisheries Management Area 29-7 which is subject to a complete harvest ban on shellfish as well as a ban on crab-fishing adjacent to the Tsawwassen Ferry Terminal (DFO 2015).

The Fraser River estuary is part of a network of locations utilized by migratory marine bird species and is part of the Western Hemisphere Shorebird Reserve Network. The Alaksen Wildlife Area and Reifel Migratory Bird Sanctuary, on nearby Westham Island, are under federal jurisdiction, while the nearby Roberts Bank and Boundary Bay WMAs are under jurisdiction of the provincial MFLNRO.

Most marine birds identified at or likely to occur at the Sites are migratory and are only present during part of the year. The improved fish habitat values and increased productivity associated with construction of eelgrass beds at the Sites will likely have a positive effect on habitat values for many marine bird species expected to occur at the Sites, particularly eelgrass-associated species such as brant geese (*Branta bernicla*) (BCTC 2006).

In addition to the species identified in **Table 1**, an inventory of common bird species identified by VITR and the time of year that they are most likely to be found in the Tsawwassen area, is provided in **Table 2** below (BCTC 2006).

Table 2 Common Bird Species in the Tsawwassen Area

Waterbirds	Species and Description
Loons	Red-throated loons (throughout the year, but highest numbers in May), common loons (<i>Gavia immer</i> ; overwintering), Pacific loons (<i>G. pacifica</i> ; winter), western grebes (<i>Aechmophorus occidentalis</i> ; late summer and early fall), horned grebes (<i>Podiceps auritus</i> ; between October and April), and pied-billed grebes (<i>Podilymbus podiceps</i> ; overwintering).
Cormorants	Double-crested cormorants (<i>Phalacrocorax auritus</i> ; colonies are present near Deltaport container terminal but tend to concentrate between October and May), Brandt's cormorant (<i>P. penicillatus</i> ; overwintering) and pelagic cormorants (<i>P. pelagicus</i> ; colony near the Deltaport container terminal).
Waders	Great blue herons (four known colonies in the vicinity of the Sites – Point Roberts, south of the Tsawwassen Ferry Terminal, Nicomekl River and Serpentine Slough, may access the Sites at low tides following habitat construction – currently they only occur in the vicinity of the Sites around Roberts Bank).

Waterbirds	Species and Description
Geese and Swans	Trumpeter swans (between October and March, although they generally prefer intertidal areas), tundra swans (<i>Cygnus columbianus</i> ; common to uncommon in the winter), lesser snow geese (<i>Chen caerulescens</i> ; from fall throughout the winter on river deltas), brant geese (spring migrants, but some overwinter, peak numbers between mid-March and early May – utilize sandy beaches and eelgrass beds), greater white-fronted geese (<i>Anser albifrons</i> ; transient in spring and fall), and Canada geese (ubiquitous).
Dabbling Ducks	Due to the subtidal location of the Sites, use is unlikely to occur.
Diving Ducks	Harlequin ducks (<i>Histrionicus histrionicus</i>), white-winged scoters, common goldeneye (<i>Bucephala clangula</i>), greater scaup (<i>Aythya marila</i>), common merganser (<i>Mergus merganser</i>), Barrow’s goldeneye, lesser scaup, canvasback (<i>Aythya valisineria</i>), and ruddy duck (<i>Oxyura jamaicensis</i>). Diving ducks usually loaf and feed along rocky shorelines. They dive to access molluscs, aquatic plants, fish and shellfish. They are mostly present between October and May. Surf scoter and bufflehead (<i>Bucephala albeola</i>) are the most common ducks in the Tsawwassen area.
Gulls and Terns	Glaucous-winged gull, mew gull (<i>Larus canus</i>), ring-billed gull (<i>L. delawarensis</i>), herring gull (<i>L. argentatus</i>), Bonaparte’s gull (<i>Chroicocephalus philadelphia</i>) and Caspian tern (<i>Hydroprogne caspia</i>) are known to be present at and around the Sites. Gulls are most abundant between June and October.
Alcids	Found year-round off the coast of BC. Common murre (<i>Uria aalge</i>) and marbled murrelets (<i>Brachyramphus marmoratus</i>) have been observed off Roberts Bank, but their important wintering habitat is the Strait of Georgia. The pigeon guillemot is common in the region. None of these species are likely to use the Sites due to their depths.
Shorebirds	Numerous species of shorebirds migrate through the Fraser River estuary, foraging on sand/mudflats and in the rocky intertidal zone. While shorebirds extensively use the mud and sandflats of Roberts Bank and Boundary Bay, the Sites and surrounding eelgrass beds would not be accessible to shorebirds due to depth.

7.4 Listed Species

The subtidal location of the Sites precludes the presence of all listed ecosystems and terrestrial species potentially occurring in the CDFmm subzone. The common eelgrass herbaceous vegetation community in the Estuary Tidal Flat Ecosystem group, is currently unranked, and contains no listed wildlife species (CDC 2014a). No listed plant species were identified on the Sites during field assessments. A table of federally and provincially listed wildlife species that have been identified as potentially occurring at or near the Sites is provided in **Attachment 5**.

None of the listed species are dependent on the Sites or are expected to be adversely affected by the Project. Overall, a net benefit is expected for some of the species.

7.4.1 Critical Habitat for Southern Resident Killer Whales

The Sites are located within designated critical habitat for southern resident killer whales (SRKWs). Critical habitats for SRKWs include Haro Strait and Boundary Pass, adjoining areas in the Strait of Georgia, and the Strait of Juan de Fuca (DFO 2011). However, as the Sites are located in relatively shallow subtidal depressions, which are bordered by eelgrass meadows to the east and south and a busy ferry terminal to the north, potential use of the Sites by SRKWs is limited. Hemmera in consultation with DFO, assessed the risk of the Project and determined that the potential Project-related effects will not result in changes in critical habitat features that affect the SRKW population (i.e., it will not alter the ability of individuals to carry out essential life functions when required, such as foraging, mating, resting, and socializing). Instead, the Project is anticipated to benefit the food supply of SRKWs, since they prey predominantly on adult chinook salmon. The Project will increase habitat availability for out-migrating juvenile chinook salmon, and is thus expected to help with population recruitment. Mitigation specific to SRKWs and their critical habitat is described in **Section 8.3** below.

8.0 Proposed Works

8.1 General Description

The proposed Project involves the conversion of existing lower-value subtidal areas, associated with historic dredge depressions, into higher value eelgrass beds (see **Attachment 1** for design drawings). The approach used will be similar to that successfully implemented for the VITR project (briefly described in **Section 5.0**). As the work proceeds, progress surveys will be undertaken to assess and guide the work.

Proposed activities include the construction of two separate perimeter berms adjacent to the southern edge of the recreational boating channel, followed by the placement of suitable fill material. The perimeter berms will extend approximately 3 m above the existing seabed, with 4:1 side slopes to be constructed of suitable quarry run rock (along the outside of the berm) and quarry screenings (along the inside of the berm). The outer layer will reduce erosion of the outer edges of the eelgrass beds while the inner layer will mitigate the seaward migration of sand from the eelgrass beds. A total of approximately 23,000 m³ of quarried rock materials is expected to be required for the establishment of the perimeter berms at the Sites (M&N 2016).

Existing elevations at the Sites are based on hydrographic surveys which were completed in January 2012, and December 2014. The existing elevation of the depressions (approximately -5.0 m to -6.0 m CD) will be raised to approximately -2.25 m CD at Site 1

and -1.4 m CD at Site 2. Approximately 135,000 m³ of sand (dense fine to silt sand) is expected to be required for the Project (M&N 2016). The sides of the resultant beds will be blended to match the adjacent eelgrass beds/seabed elevation, with reasonably even and uniform substrate surfaces. A survey to confirm the proper establishment of the Sites will be conducted after the final placement of sand fill to confirm that design elevations have been achieved.

To mitigate risk to the recreational boating community, two navigational markers will be installed on the north side of the Sites at both ends of each containment berm. Details relating to the navigational markers are provided in the design drawings in **Attachment 1**.

Following placement of substrate to an elevation suitable for the establishment of eelgrass, transplanting of donor stock eelgrass will be undertaken at the Sites (see **Section 8.4** below). Upon completion, the estimated area of eelgrass beds at the Sites is anticipated to be 42,600 m²: 25,800 m² at Site 1 and 16,800 m² at Site 2.

Work will be undertaken using heavy equipment, with access for construction equipment and materials anticipated to be from the water, by barge, via the existing boating channel.

8.2 Material Placement

Dredged materials, sourced from the lower reaches of the South Arm of the Fraser River, are proposed for beneficial use in construction of the Project. Given that Fraser River Pile & Dredge (GP) Inc. (FRPD) currently holds the Channel Maintenance Dredging and Sand Management Contract with VFPA, and has the appropriate equipment to undertake both the dredging and placement of dredged material at the Site, the proposed construction methodology described below is based on the assumption that FRPD will be part of the construction team undertaking this work.

FRPD currently has two dredges that are used for maintenance dredging in the South Arm of the Fraser River – the Columbia Dredge and the 309 Dredge. The Columbia Dredge is a cutter-suction dredge that is capable of pumping material at a rate of approximately 1,200 to 2,000 m³/hr. Dredged material can be pumped to a distance of approximately 2 km through a pipeline, although it is possible to add on a booster to extend this distance. The 309 Dredge is a trailing suction hopper dredge that has an internal capacity of approximately 3,000 m³. When operating at maximum capacity, the hopper in the 309 Dredge can fill up in approximately one hour. Dredged material is commonly discharged by opening the bottom doors of the hopper or by using high pressure pumps with hoses to discharge the material.

While dredging in the lower reaches of the South Arm of the Fraser River would be conducted by FRPD under its current contract with VFPA, the placement of material and final construction methodologies would be determined following selection of a contractor.

8.3 Mitigation during Material Placement

Project construction is scheduled to occur during applicable least risk work windows for Roberts Bank in order to minimize the risk of direct or indirect effects on juvenile salmonids and Dungeness crabs, as applicable. By limiting the placement of material to the least risk work window for juvenile salmonids (i.e., August 16 to February 28), the Project can avoid any direct or indirect impacts on out-migrating juvenile salmonids. Since depths at the Sites currently range in excess of -5.0 m CD, the Dungeness crab least risk work window is also applicable to mitigate potential impacts during fill placement. Avoiding placement of fill (including riprap) in water depths greater than 5 m deep at daily low water for the period October 15 to March 31, will help to ensure the protection of adult egg-bearing female Dungeness crabs. If in-water fill works at depths greater than 5 m cannot be avoided during this higher risk period, an underwater survey and (if required) salvage of adult Dungeness crabs may be pursued immediately in advance of fill placement. The VFPA Project team will continue to engage with DFO to ensure the Project is constructed in consideration of the applicable least risk work windows for relevant fisheries.

Based on advice received from DFO in June 2015, the following applicable mitigation measures have been suggested by DFO to address and reduce potential impacts on SRKWs and their critical habitat during material placement activities:

- Dedicating an appropriately qualified Marine Mammal Observer (MMO) (during the period from May 1st to October 31st) or Officer of the Bridge (during the period from November 1st to April 30th) to conduct constant observations for SRKWs (or other marine mammals) in the vicinity of the Sites prior to and during material placement activities;
- Establishing a killer whale “Safety Zone” at a radius of 1,000 m from the vessels undertaking the works;
 - Halting all material placement works immediately if a killer whale enters the “Safety Zone” and notifying the DFO Observe, Record and Report line at 1-800-465-4336.
 - Re-initiating material placement works only after killer whales have not been observed in the “Safety Zone” for 30 minutes.
- Using a hydrophone to monitor for whale sounds in surrounding waters if undertaking material placement at night, or at times of poor visibility;
- Documenting observations of killer whales and ensuring mitigation measures (e.g., material placement work stoppages) are implemented;
- Placing material at slack tide and/or low current flow to the extent possible;
- Limiting placement of material to periods of suitable weather conditions (e.g., calm days) to the extent possible;
- Reviewing and implementing practical sediment control measures (as feasible), around the perimeter of the work area before commencing work in order to minimize dispersal of a potential sediment plume;

- Selecting appropriate dredging equipment and operating the equipment in a manner that reduces spillage;
- Operating machinery on water (i.e., from a barge or vessel) in a manner that minimizes disturbance to the bed of the water body;
- Ensuring machinery is adequately maintained in such a way as to prevent leaks and spills;
- Ensuring machinery arrives in a clean condition; and
- Preventing the release of any waste from the Project into adjacent waterbodies.

As the Project proceeds towards construction and a final construction plan is developed, further consideration will be given towards the mitigation of potential effects. This will culminate in the development of an Environmental Protection Plan (EPP) by the contractor, which will consider the above listed advice received from DFO and provide detailed mitigation measures to be applied during construction. The objectives of the EPP will be to provide details on site-specific values, potential environmental issues, necessary mitigation measures, and monitoring requirements. Prior to the finalization of this EPP, the VFPA Project team will ensure that the EPP addresses mitigation of material placement.

Environmental construction monitoring will also be implemented to ensure the proper employment of these mitigation measures and to confirm that any potential residual effects are avoided. A qualified environmental monitor will be present during construction activities to provide guidance and will have the authority to stop activities if the monitor determines that the works are likely to result in significant negative effects to the environment.

8.4 Eelgrass Planting

Following construction, stabilization, and final survey of the eelgrass beds at the Sites, eelgrass will be planted using transplant methods developed in the mid-1990s by Precision Identification. This methodology emphasizes the use of high quality donor stock, and high planting densities. Eelgrass donor material will be sourced from suitable adjacent beds using SCUBA divers. To ensure that the donor beds are not negatively affected by the removal of transplant stock, a precautionary harvesting approach will be used. More specifically, removal of parent stocks will be limited to one shoot per square metre for moderately dense¹ beds and two shoots per square metre for dense² beds. Additionally, donor beds will be geo-referenced to ensure that future donor stocks are not collected from the same bed. Parent stock will be planted at densities of 8 to 10 shoots per square metre between the months of April and September. Given the relatively large size of the proposed eelgrass beds, and the labour-intensive nature of subtidal plantings installed via this method, it is anticipated that the plantings may need to be undertaken in two separate but

¹ Moderately dense eelgrass beds are defined by eelgrass shoot densities of 20 to 70 shoots/m²

² Dense eelgrass beds are defined by eelgrass shoot densities of >70 shoots/m²

consecutive years (i.e., 2018 and 2019). The Project team may also adjust transplanting methodology (e.g., transplanting densities) based on additional technical input.

8.5 Post-construction Monitoring

During the post-construction phase, the Project will be subject to the terms and conditions of the habitat banking working agreement between VFPA and DFO as well as any applicable conditions of permits and approvals.

In order to assess the achievement of biological objectives at the Sites, a formal monitoring program will commence after plant installation, towards the end of the first growing season. Post-construction monitoring will be undertaken in accordance with the Post-Construction Monitoring Plan (PCMP) for VFPA's HEP. The PCMP is a working document, which was developed with DFO's input and feedback. The PCMP outlines protocols for assessing various habitat types, including eelgrass habitat.

It is anticipated that the application of sound design criteria, proper oversight and supervision during both construction and post-construction monitoring will contribute towards success of the Project. In the unlikely event that the Project objectives are not achieved and the habitat enhancement site is not functioning as intended, follow-up measures may be required. Remedial measures may, for instance, include additional eelgrass transplanting.

9.0 Sediment Assessment

Sediment sourced from routine maintenance dredging operations in the South Arm of the Fraser River is proposed for use in construction of the Project. More than two million cubic metres of sand and silt are removed from the South Arm on an annual basis. To assess the suitability of maintenance dredging material from the South Arm of the Fraser River, relevant sediment chemistry and physical data were analyzed. The results of the analysis suggest that sediment quality throughout the South Arm is relatively predictable and meets the necessary sediment quality criteria for use in local projects. Detailed analysis of the material has been included in the Source Sediment Characterization Report included in **Attachment 6**.

10.0 Schedule

Construction of the Project is forecast to begin in late summer/early fall 2017 with an anticipated construction period of approximately four to six months. Planting of donor eelgrass stock is expected to occur during the following two summers (i.e., 2018 and 2019).

10.1 Least Risk Work Windows

The works will be scheduled to occur during the appropriate least risk work windows for Roberts Bank. The least risk work window to mitigate risk of impacts to juvenile salmonids is August 16th to February 28th. In order to minimize risk of impacts to female Dungeness crabs, fill placement in water at depths greater than 5 m, should occur between April 1st and October 14th.

In addition, as SRKWs are more likely to be present in the vicinity of the Sites between May 1st and October 31st, a full-time MMO will be required if material placement is to be undertaken during that time period (see **Section 8.3** above).

11.0 Effects Assessment Overview

Valued ecosystem components (VECs) or valued social components (VSCs) that could potentially be adversely affected by the proposed works include:

- Soils and sediments;
- Surface water and water bodies;
- Aquatic species and habitat;
- Vegetation;
- Wildlife and habitat;
- Invasive species;
- Current land use;
- Navigation and water use;
- Noise;
- Air Quality; and
- Safety.

Table 3 below summarizes proposed measures to mitigate adverse effects on each of these key VECs/VSCs. With these mitigation measures and application of appropriate best management practices, residual adverse effects are not likely to result from the proposed Project.

Table 3 Summary of Potential Effects and Mitigation Measures

VEC/VSC	Description and Potential Effects	Mitigation Measures*
Soils and sediments	<ul style="list-style-type: none"> • There is some potential for the placement of fill material to result in temporary sedimentation effects to surrounding aquatic life. 	<ul style="list-style-type: none"> • Construction will be undertaken with appropriate mitigation and monitoring in place, to ensure that any potential construction-related effects are minimized. • A Project-specific EPP will address mitigation measures to mitigate off-site transport of sediment.
Surface water and water bodies	<ul style="list-style-type: none"> • There is some potential for water quality impacts to occur during works (e.g., during fill placement). • There is a potential for spills or equipment leaks to occur during construction which could have an adverse effect on water quality, benthic biota or fish. 	<ul style="list-style-type: none"> • A Project-specific EPP will be created to address environmental concerns associated with this Project. Standard mitigation measures including working within the appropriate least risk work windows, implementing spill prevention planning, etc. will be included.
Aquatic species and habitat	<ul style="list-style-type: none"> • The Sites currently have existing aquatic habitat values and although the Project will replace existing (lower value) fish habitat (subtidal depressions) with higher value fish habitat (eelgrass), there is a risk of either direct (e.g., injury or mortality) or indirect (e.g., water quality) impacts on aquatic species and fish during in-water construction. • The Sites are located within designated critical habitat for SRKWs. However, as the Sites consist of relatively shallow subtidal depressions, potential use by SRKWs is limited. 	<ul style="list-style-type: none"> • Work is scheduled to occur during the appropriate least risk work windows. • Mitigation measures specific to SRKWs during material placement, as outlined in Section 8.3, will be incorporated as appropriate. • A Project-specific EPP will address any aquatic species and habitat concerns associated with this Project.

VEC/VSC	Description and Potential Effects	Mitigation Measures*
Vegetation	<ul style="list-style-type: none"> The Sites are largely unvegetated with cover limited to a diatom mat and drift macroalgae. 	<ul style="list-style-type: none"> Upon completion of construction of the beds, eelgrass shoots will be transplanted at the Sites. There will be an overall “net gain” in the vegetation values at the Sites.
Wildlife and habitat	<ul style="list-style-type: none"> The Sites currently have existing aquatic and wildlife habitat values and although the Project is expected to benefit wildlife by replacing lower value aquatic habitat (subtidal depressions) with higher value aquatic habitat (eelgrass), there is still a risk of disturbance to wildlife species during construction. 	<ul style="list-style-type: none"> A Project-specific EPP will address any aquatic species and wildlife habitat concerns associated with this Project.
Invasive Species	<ul style="list-style-type: none"> The spread of non-native species (e.g., Japanese eelgrass) could be promoted by construction of new habitat suitable for colonization. 	<ul style="list-style-type: none"> Work will primarily occur in previously disturbed areas. The post-construction elevation of the eelgrass beds is highly favorable for the establishment of native common eelgrass (i.e., <i>Z. marina</i>) and less favorable for non-native eelgrass (i.e., <i>Z. japonica</i>). Following construction, native common eelgrass will be planted at the Sites. Post-construction monitoring will occur to assess the establishment and survival of planted eelgrass. Any identified deficiencies and/or invasive species concerns will be addressed through appropriate management measures.

VEC/VSC	Description and Potential Effects	Mitigation Measures*
Current Land Use	<ul style="list-style-type: none"> • Construction activities could temporarily affect fishing activities both within and beyond the Sites. • The presence of a submerged riprap perimeter berm may represent a slightly elevated risk to traditional activities that involve use of the recreational boating channel. 	<ul style="list-style-type: none"> • Efforts will be made to ensure construction does not conflict with fisheries. • Proper communication and signage (see the design drawings in Attachment 1) will be applied, as required. • The VFPA Project team will engage with the recreational boating community to further inform the design of marine markers and appropriate signage.
Navigation and water use	<ul style="list-style-type: none"> • Construction activities, in particular access by barge (for construction materials and equipment), could affect ferry operations. • Construction activities, in particular physical works on the edge of the boating channel, could impact fishermen and/or boaters. • During operations, the presence of a submerged riprap perimeter berm may represent a slightly elevated risk to fishermen and/or other boaters using the boating channel. 	<ul style="list-style-type: none"> • The eelgrass beds have been designed to maximize the created habitat area while maintaining the minimum width of the existing boating channel. • Consultation with BC Ferries will be ongoing to ensure that any concerns and/or operational requirements are properly addressed. • The public will be notified of activities undertaken in regards to the Project. • The Project will be reviewed by VFPA Marine Operations as the Sites are under VFPA Navigational Jurisdiction. The Project will comply with the <i>Navigation Protection Act</i> and minimize any impacts on boat traffic during and following the construction phase. • Proper communication and signage (see the design drawings in Attachment 1) will be applied, as required.

VEC/VSC	Description and Potential Effects	Mitigation Measures*
Noise	<ul style="list-style-type: none"> • There is some risk for noise from heavy equipment to be heard by offsite users (e.g., at the Tsawwassen Ferry Terminal). 	<ul style="list-style-type: none"> • The work will occur adjacent to the Tsawwassen Ferry Terminal and causeway which generates vehicle and boat traffic. Large exceedances of this background noise are not anticipated. • Other appropriate noise mitigation measures, if required, will be developed and implemented through the EPP.
Air Quality	<ul style="list-style-type: none"> • Construction activities are unlikely to impact air quality. 	<ul style="list-style-type: none"> • As the majority of construction is anticipated to be undertaken from the water by barge using clean materials, dust generation is not anticipated to be an issue at this site. • All unnecessary idling will be minimized. • The Project should be pursued to completion as soon as feasible to reduce on-site operation of machinery.
Safety	<ul style="list-style-type: none"> • Construction activities with heavy equipment represent some health and safety risks, primarily to construction workers. • The riprap containment berms could represent a safety risk to fishermen and/or other boaters that are unaware of the Project boundaries. 	<ul style="list-style-type: none"> • An Occupational Health and Safety Plan will be developed, which will include measures that comply with WorkSafe BC standards, to ensure safe work and avoid any impacts on workers (or the public, in particular recreational boaters). • Signage/markers will be placed along the edge of the berm(s) to notify the public and avoid incidental collisions with recreational boats (see design drawings in Attachment 1).
<p>* Note: Provided that these mitigation measures are properly implemented, it is anticipated that any notable residual adverse effects can be avoided.</p>		

12.0 Regulatory Considerations

The Project will meet applicable regulatory requirements and the Project team will obtain necessary permits and approvals prior to the initiation of these works. **Table 4** below summarizes the key anticipated permits, approvals or reviews that would need to be received prior to construction. Note that obtaining other permits (e.g., construction zone permits, oversized vehicle use permits, scientific fish collection permits etc.), will be the responsibility of the contractor conducting the works and have not been included in **Table 4** below.

In May 2015, DFO reviewed the Project information and confirmed that the Project would conform to the Fisheries Productivity Investment Policy as a habitat development and/or restoration project that may be deposited into a habitat bank. In accordance with DFO's Fisheries Protection Program Guidance, an Assisted Assessment by Qualified Environmental Professionals was undertaken in April 2015 to determine the Project's potential for "Serious Harm" to fish (**Attachment 7**). The assessment indicated that the Project is not likely to result in Serious Harm to fish, and that an Authorization under the *Fisheries Act* would not be required for the Project.

A more detailed summary of the Project-related regulatory engagement that has been conducted to-date is included in the "Regulatory Considerations" section of the Key Milestones Table in **Attachment 2**.

Table 4 Summary of Permits/Approvals for the Project

Permit/Approval Description	Permitting or Approving Agency	Status
BC Ferries License Agreement	BC Ferries	Agreement anticipated to be in place by end of Q1 2017
TFN Project Agreement	TFN	Agreement anticipated to be in place by end of Q2 2017
Supplementary Letters Patent	Transport Canada	Submission proposed for February 2017
Project and Environmental Review Project Permit (Category C)	VFPA – Planning and Development	A formal review is requested with submission of this Project Review Application Package
<i>Fisheries Act</i> – Assisted Assessment	DFO	Completed in April 2015

Permit/Approval Description	Permitting or Approving Agency	Status
<i>Canadian Environmental Protection Act – Disposal at Sea Review</i>	Environment and Climate Change Canada – Disposal at Sea Program	Exemption received in February 2016
<i>Navigation Protection Act – Notice of Works</i>	Transport Canada – Navigation Protection Program	Anticipated submission of Notice of Works in February 2017
<i>BC Environmental Assessment Act – Request for a Project exemption under Section 10(1)(b)</i>	British Columbia Environmental Assessment Office	Exemption received in September 2016

13.0 Aboriginal Consultation

The proposed Project falls within, or in close proximity to, the asserted traditional territory, or lands settled by treaty, of the following Aboriginal groups:

- TFN;
- Tsleil-Waututh First Nation;
- Musqueam Indian Band;
- Semiahmoo First Nation;
- Sto:Lo Nation;
- Stz'uminus First Nation;
- Cowichan Tribes;
- Halalt First Nation;
- Penelakut Tribe;
- Lake Cowichan First Nation;
- Lyackson First Nation; and
- Hwlitsum First Nation.

VFPA's Project team is also sharing Project-related information with the Metis Nation of BC.

VFPA's Aboriginal Consultation Program for the Project has been aimed at ensuring that all applicable legal, procedural and policy requirements are effectively addressed and to ensure that positive, productive, and lasting relationships are maintained between VFPA and Aboriginal groups. The VFPA Project team has structured and is implementing, consultation with the objective of ensuring effective two-way communication and information sharing with the above-listed Nations. This will allow for potential Project-related benefits to be maximized, potential adverse effects to be minimized and any legal obligations to be fully met.

In order to ensure that the objectives of the consultations are met, VFPA's Project team has sought input from Aboriginal groups with respect to the current use of the Project area, potential effects on Aboriginal interests, and on components such as design. The VFPA Project team is committed to incorporating traditional knowledge into the Project wherever possible and will continue to work with these communities to fulfill this objective. VFPA's Project team is currently exploring the opportunity to host a knowledge-sharing workshop for the Project for spring 2017.

As engagement is ongoing, a consultation log will be submitted in spring 2017 that, in addition to summarizing Project consultation efforts with Aboriginal Groups, will specifically identify any relevant new information in relation to this engagement component. To date, consultation activities with First Nations have included:

- Meetings;
- Notification of studies/surveys (e.g., dive surveys);
- Emails, letters and phone calls; and,
- Provision of Project-related materials.

The VFPA Project team received a letter of support for the Project from TFN during initial Project engagement and the VFPA Project team is continuing to work closely with TFN with respect to the design of the Project, its interface with the TFN water lot, opportunities for TFN involvement and potential collaboration during Project construction. The VFPA Project team is also exploring opportunities for other Aboriginal Groups to participate in the construction of the Project, in particular the eelgrass transplant component.

During consultation with other Nations, no concerns related to the Project design or other components of the proposed Project that cannot be addressed through design modifications or other considerations have been articulated. The VFPA Project team will seek to confirm this understanding and address any outstanding questions, concerns or comments as consultation continues and in advance of moving into the construction planning and implementation phases.

Consultation is ongoing and the VFPA Project team will continue to share Project information as it becomes available and will explore opportunities for First Nations training, employment and economic development opportunities associated with Project construction. The VFPA Project team will continue to engage in one-on-one meetings with Aboriginal groups regarding the Project and seek input from Aboriginal groups through HEP consultation.

In addition to consultation meetings and provision of Project-related documents, including revised design drawings, the VFPA Project team undertook a Project-related knowledge-sharing workshop with Aboriginal groups in April 2015. This workshop was primarily aimed at sharing technical and traditional knowledge as it relates to the Project and, where appropriate, incorporating community input into the Project design and the methodology for

eelgrass transplantation. It was also intended to ensure traditional knowledge and use of the area was understood and considered in Project design and implementation. In response to questions and interest expressed during HEP consultation regarding eelgrass transplantation methodology, the VFPA Project team will aim to provide Aboriginal groups with additional detailed, practical training on this subject and will seek to identify opportunities for participation in Project construction.

14.0 Communication and Engagement

The following is a summary of the communication and engagement initiatives that have been undertaken or are proposed for the Project. A detailed Public and Stakeholder Engagement Plan is provided in **Attachment 8**.

14.1 Consultation and Engagement Audiences

The VFPA Project team has been and will continue to share information regarding the Project with key stakeholders, including the local community and local interest groups. As part of consultation and engagement, VFPA's Project team will engage a variety of audiences, including:

- **Aboriginal groups:** Consultation with Aboriginal groups will be guided by a separate Aboriginal Consultation Plan
- **Stakeholders:** Corporation of Delta, BC Ferries, adjacent residents (including English Bluff), recreational boaters, Tsawwassen Beach Homeowners Association
- **General Public:** Tsawwassen and Ladner residents

14.2 Public and Stakeholder Consultation

Public and stakeholder consultation is proposed to include:

- A three week consultation period, with a two week notification period;
- A discussion paper and feedback form;
- A two-hour open house at the VFPA's Delta Community Office with knowledgeable staff and information boards;
- An online feedback form (PortTalk); and
- A summary report and input consideration report, demonstrating how input was considered in project development.

14.3 Notification

The VFPA Project team will use a variety of notification tactics to ensure that stakeholders and the general public are aware of opportunities to provide input and participate in the consultation process.

Public notification will include:

- One advertisement in the Delta Optimist community newspaper;
- Email distribution to the HEP list of subscribers;
- Website updates;
- Phone calls or meetings with key stakeholders;
- Mail distribution to nearby residents; and
- Social media promotion of engagement opportunities.

15.0 References

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